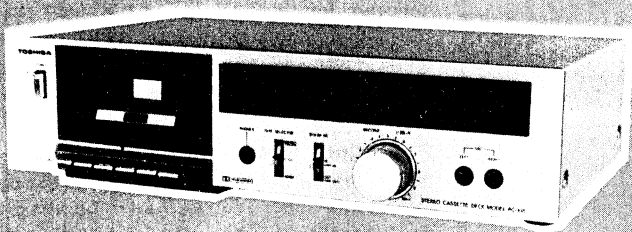


TOSHIBA

STEREO CASSETTE DECK

PC-X15

MC-Service



SPECIFICATIONS

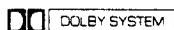
Power Supply:	AC 240V ~, 50 Hz (for U.K. and Australia) AC 220V ~, 50 Hz (for European Countries except the U.K.)	Frequency Response:	25 Hz — 18 kHz for metal tapes at -20 dB 25 Hz — 16 kHz for chrome position tape at -20 dB 25 Hz — 15 kHz for normal tapes at -20 dB
Power Consumption:	14W	Input Jacks:	MIC: 0.25mV (600 ohm —10k ohm) LINE: 70mV (50k ohm min.)
Track System:	4-track 2-channel stereo	Output Jacks:	LINE: 0.4V (50k ohm) HEADPHONES: 0.25mW (8 ohm)
Recording/Erase:	AC bias (85 kHz), AC erasure	Main Dimensions (mm):	420(W) x 110(H) x 280(D) (including rubber feet and front panel controls)
Heads:	AP head, and AF erase head	Weight:	4 kg
Motor:	DC servo-motor	Accessories:	Head cleaner. 1
Tape Speed:	4.8 cm/sec.		
Fast Forward/-	Approx. 80 sec. (C-60)		
Rewind Time:			
Semiconductors:	4 ICs, 17 transistors, 6 diodes		
Wow & Flutter:	0.06% (WTD RMS)		
S/N Ratio:	58 dB with chrome position tape (Line, peak, WTD)		
Dolby NR:	Noise level improved by 5 dB at 1 kHz, and by 10 dB at 5 kHz		

* Design and specifications are subject to change without notice.

TE, TU, AY

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3. DISASSEMBLY INSTRUCTIONS	7 to 8
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* Noise Reduction System is manufactured under licence from Dolby Laboratories.
 "DOLBY" and the Double-D symbol are Trademarks of Dolby Laboratories Inc.

1. FEATURES

- LED digital peak level meters
- Metal tape compatible
- 3 level conversion tape selector
- Dolby NR system
- Dolby NR and Recording LED indicators
- Soft-eject system
- Review and cueing functions convenient in finding a particular part of a recording.

2. OPERATING INSTRUCTIONS

FRONT VIEW

[TAPE COUNTER] Tape Counter Counter Reset Button

To find recorded parts of a tape, make a note of the tape counter reading when recording. The tape counter can be reset to <000> at any time by simply pressing the reset button.

[POWER] Switch

When the POWER switch is pressed <ON>, the level meters light to indicate that the tape deck is ready for use.

[■/▲] Stop/Eject Key

All keys except the [II] Pause key are reset and the tape stops when this key is pressed. Pressing this key again opens the cassette compartment.

[●] Record Key

Press this key and the [▶] Play key to record.

[▶] Play Key

[◀◀] Rewind Key

[REVIEW]

Press this key to rewind the tape. When this key is pressed during playback, the tape is rewound until the key is released (review operation).

[▶▶] Fast-Forward Key

[CUE]

Press this key to advance the tape rapidly. When this key is depressed during playback, the tape is advanced rapidly until the key is released, making it easy to find a particular piece of music.

[II] Pause Key

To halt tape transport temporarily during either recording or playback, press this key. To start again in the same mode, simply press the PAUSE key again.

LED Peak Level Meters

These peak meters show the recording level for recording, and the recorded signal level during playback.

[REC] Recording Indicator Lamp

Lights when the [●] Record key is pressed.

[DOLBY NR] DOLBY NR Indicator Lamp

Lights when the [DOLBY NR] switch is <IN>.

[MIC] Microphone Jacks

Insert microphone plugs into these jacks. <L> indicates left channel and <R> right channel. Use a microphone with a 6.3mm diameter plug (impedance: 600 ohm to 10k ohm).

[RECORD]

Recording Level Adjustment Controls

Adjust the recording level for line and microphone inputs with these controls (outer for left channel and inner for right channel).

[DOLBY NR]

Dolby* NR Switch with MPX Filter

To make Dolby recordings switch to the <IN> position.

During playback of Dolby encoded recordings, the switch may be left in <IN> position. Switch to the <OUT> position to play back or to make recording without Dolby NR.

[TAPE SELECTOR] Switch

Set this switch according to the type of tape being used.

[PHONES] Headphones Jack

Plug a pair of headphones (8 ohm impedance, 6.3mm diameter plug) into this jack for private headphone listening.

Figure 1

BACK VIEW

DIN REC/P.B.

[LINE IN/REC] Recording Connection Code

Connect this cord to your amplifier for recording.

[LINE OUT/PLAY] Playback Connection Code

Connect this cord to your amplifier for playback.

(TE)

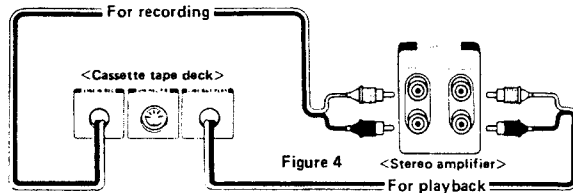
Figure 2

(TU, AY)

Figure 3

Connections

■ Connecting to stereo amplifier

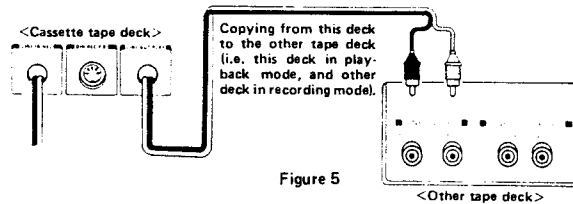


- Connect the connecting cables to the amplifier terminals as shown in the following diagram. Note that the red plugs are used for the right channel.

Note:

- Check that the amplifier power switch is off before making any connections.
- Insert all plugs firmly and securely. Loose connections can result in noise and other failures.

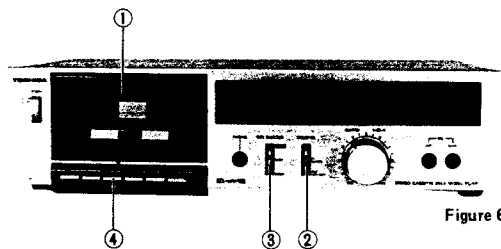
■ Connecting to another tape deck (direct)



- When using another tape deck for dubbing (copying) and editing purposes, connect directly to the rear panel terminals of the other deck as shown in the following diagram. Note, however, that with stereo amplifiers equipped with dubbing facilities, connect via the amplifier according to the amplifier Owner's Manual.

Playback

Operating procedure



- 1 Insert a recorded cassette tape into the cassette compartment.
- 2 Set the Dolby NR switch to <IN> for Dolby recorded tapes.
Set to the <OUT> position for the tapes recorded without Dolby NR.
- 3 Also set the [TAPE SELECTOR] switch according to the type of tape. (Refer to Table 1.)
- 4 Press the [▶] Play key.

Table 1

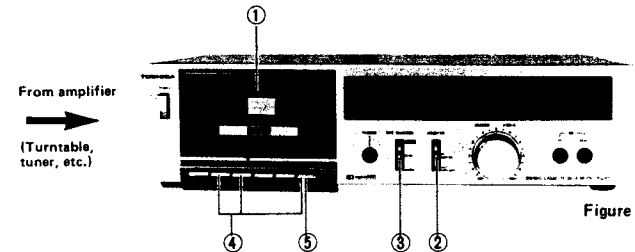
Type of Tape	Position
Metal tape	METAL
Chrome position tape	CrO2
Normal tape	NORM

- Insert the tape with the exposed tape downwards, and the side to be played facing forwards.
- Note that playback will not start if the [▶] Play key is pressed while the [||] Pause key is still depressed.
- The full auto-stop mechanism will stop the tape when the end of the tape is reached during recording, playback, fast forward winding and rewinding. Although the keys will be automatically released, the power will remain on. To switch the power off, press the [POWER] switch.

Recording

■ Recording from phonograph records or tuner

Operating procedure



- 1 Insert a tape which still has its erasure prevention tabs.
- 2 Set the [DOLBY NR] switch to the <IN> position for Dolby NR recording.
Set to the <OUT> position to make recordings without Dolby NR.
- 3 Set the [TAPE SELECTOR] switch to the position corresponding to the type of tape being used. (See Table 1 above.)

- 4 To place the deck record standby mode, press the [||] Pause key, then press the [●] Record and [▶] Play keys. Adjust to the correct recording level on the level meters.
- 5 Press the [||] Pause key once again to start recording.

■ Live Stereo Recording with Microphones

For live recordings with microphones, plug the microphones (optional) into the [MIC] jacks, then start recording as explained in steps ① to ⑤.

■ Setting the Recording Level

The correct recording level depends considerably on the type of tape used and the programme material being recorded. The correct tape and recording level should be selected to give the best frequency response yet the lowest noise level.

For the following three tape types, the [RECORD] control should be set so that the peak level meters light at the loudest passage of that programme selection:

Table 2

Type of Tape	Peak level meters
Metal tape	+3 dB or +5 dB
Chrome position tape	0 dB or +3 dB
Normal tape	-3 dB or 0 dB

The high-frequency response, in particular, depends considerably on the type of tape and the recording level. Metal tape, for instance, provides better high-frequency response than normal tape, thus giving much better reproduction of higher pitched instruments and voices. This is illustrated in Fig. 8.

For the same type tape, there is better higher-frequency response at lower recording as shown in Fig. 9.

Therefore to record programme material which contains considerable high-frequency sound, set the recording level somewhat lower. The level meter on this deck is an electronic "digital" indicator, which displays the peaks of the signal, in red over 0 dB and in green below. This allows very precise setting of the recording level.

The Dolby mark and the adres mark indicate the Dolby and adres calibration positions, respectively. The adres mark is for use when the tape deck is connected to an adres unit. The adres system is Toshiba's new noise reduction and dynamic range expansion system.

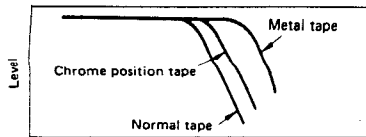


Figure 8 Frequency Response Curves for Different Types of Tape

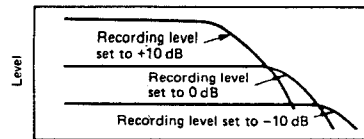


Figure 9 High-frequency response (Hz) Frequency Response Curves at Different Recording Levels

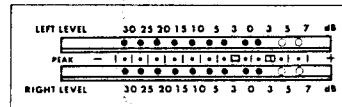


Figure 10

Dolby* System

- The Dolby noise reduction system suppresses tape noise (500 Hz or above) and improves the signal-to-noise ratio.
- The principle of Dolby NR system is to increase the recording level of mid to high-frequency signals. This increases the difference between the signal level and the noise

level. On playback the signal level is reduced to its original level, simultaneously suppressing tape noise.

- Noise reduction system manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

Simple Troubleshooting

- **No sound →**
 - Check connections.
 - Also check amplifier selector position.
- **Tape fails to move →**
 - Has the [II] Pause key been pressed?
- **Not possible to put into recording mode →**
 - No tape in the cassette compartment?
 - Erasure prevention tab in the back edge of cassette tape already broken off?
- **Tape stops almost straight away after pressing a transport mode key →**
 - End of tape has been reached, resulting in automatic stop.
- **Fluttering of "gravel voice" tendencies in the sound →**
 - Check for dirt building up on the head, pinch roller and capstan.
 - Check whether the tape is rather old and shows signs of stretching etc.

Warning

- Do not place the cassette deck:
 - in places where there is oily smoke or where humidity is high,
 - near a stove where the temperature is above 35°C,
 - near an amplifier or other electronic appliances where hum is emitted,
 - on an unstable support such as a cardboard box,
 - in a dusty place,
 - in a place exposed to direct sunlight.
- Insert the power plug fully to prevent children from touching an exposed portion. When removing the power plug, pull the plug

not the cord.

- Make sure that small objects such as hairpins, needles, etc. are not dropped into the cassette deck, be especially careful with children in this respect.

Do not use the cassette deck if it gets wet for any reason, since it may give you an electric shock. If the deck gets wet, consult the shop where you purchased it.

If you notice any abnormality or fault, immediately switch off the deck at the POWER switch and pull out the power plug. Then consult the shop where you purchased the cassette deck.

3. DISASSEMBLY INSTRUCTIONS

Top Cover and Jack Plate Removal

1. Remove four screws (A) from each side of Top Cover. (See Figure 11).
2. Remove two screws (B) from Jack Plate. (See Figure 12).
3. Lifting the Top Cover upright, pull it back wards and the Top Cover and Jack Plate can be removed out.

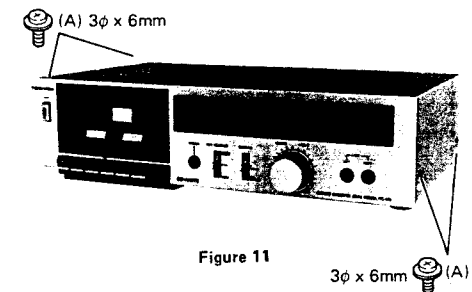


Figure 11

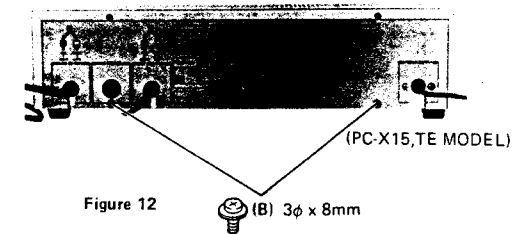


Figure 12

Bottom Cover Removal

1. Remove two screws (C) from the bottom plate. (See Figure 13).
2. Bottom Cover can be removed from the unit.
3. Follow this instructions, then adjustments can be done without removing the bottom plate. (See Figure 14).

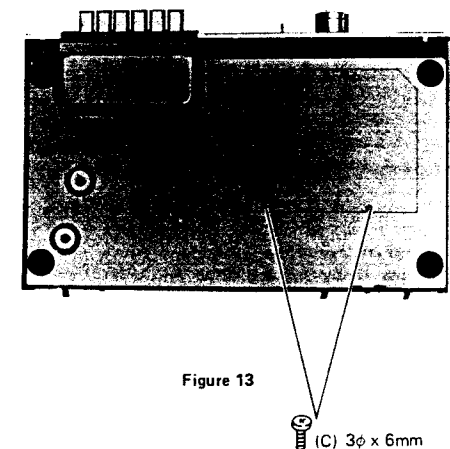


Figure 13

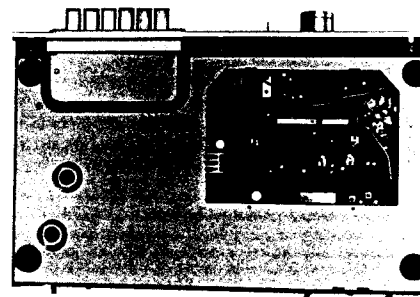


Figure 14

Cassette Cover Removal

1. Remove the top cover.
2. Remove one screw (D) which holds the door lever and the panel then Cassette Cover can be removed. (See Figure 15, 16).

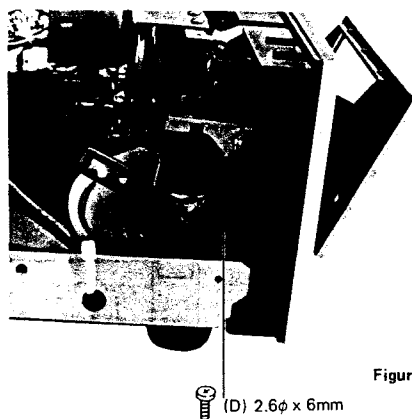


Figure 15



Figure 16

Mechanism Assembly Removal

1. Remove cassette cover.
2. Remove four screws (E) from Front panel then mechanism assembly can be removed. (See Figure 17).
3. Remove one screw (F) and one washer (G) from Front panel.

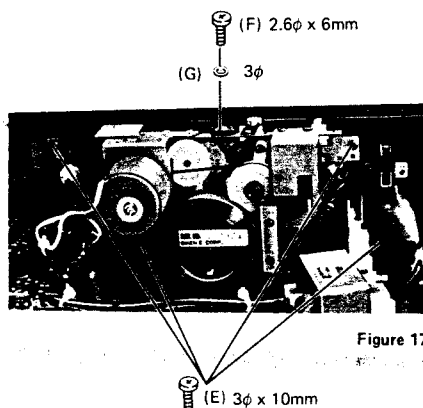


Figure 17

Front Panel Removal

1. Remove the top cover and mechanism assembly.
2. Remove the two knobs (H). (See Figure 19).
3. Remove the three screws (I). (See Figure 18)
4. Front panel can be removed from unit.

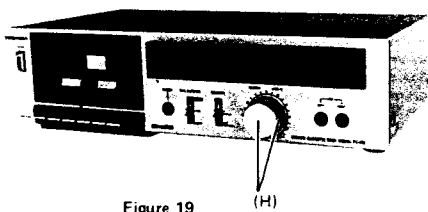


Figure 19

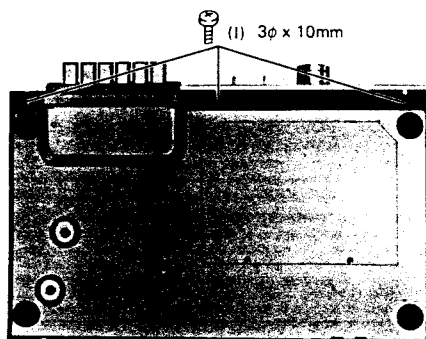


Figure 18

4. MOTOR REPLACEMENT**1. Motor Removal**

Put a soldering iron on the upper part of the pulley to melt an adhesive agent and pull the motor pulley upward strongly.

2. Motor Installation

- (1) Make the gap (2.5mm) between the motor and the motor pulley and apply an adhesive agent on the top of motor pulley.
- (2) Soak the adhesive agent by moving the pulley up and down and then fix the motor pulley by keeping 2.5mm gap for 1 minute. In this case, take care not to stick an adhesive agent to the part (A).

Note: In replacing the motor, the belt must be taken out. In reinstalling the belt, proceed as follows.

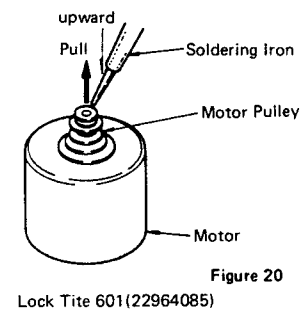


Figure 20

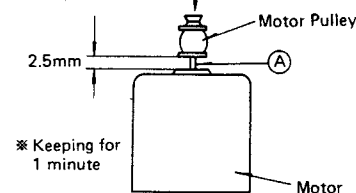


Figure 21

(LOWER)

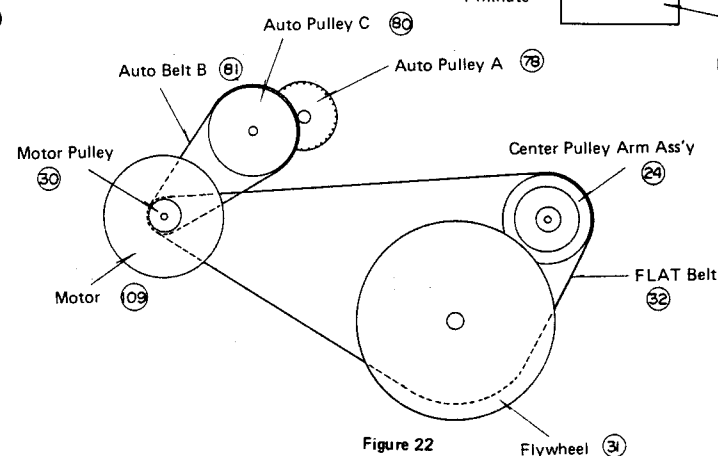


Figure 22

(UPPER)

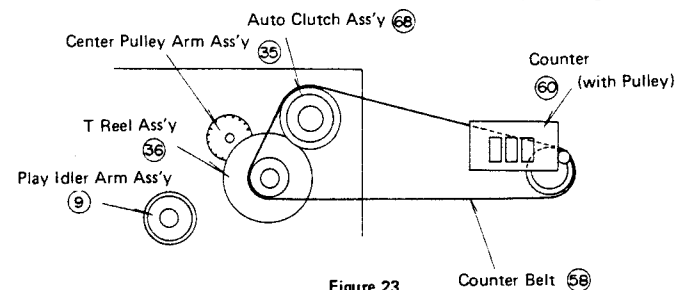


Figure 23

5. BLOCK DIAGRAM

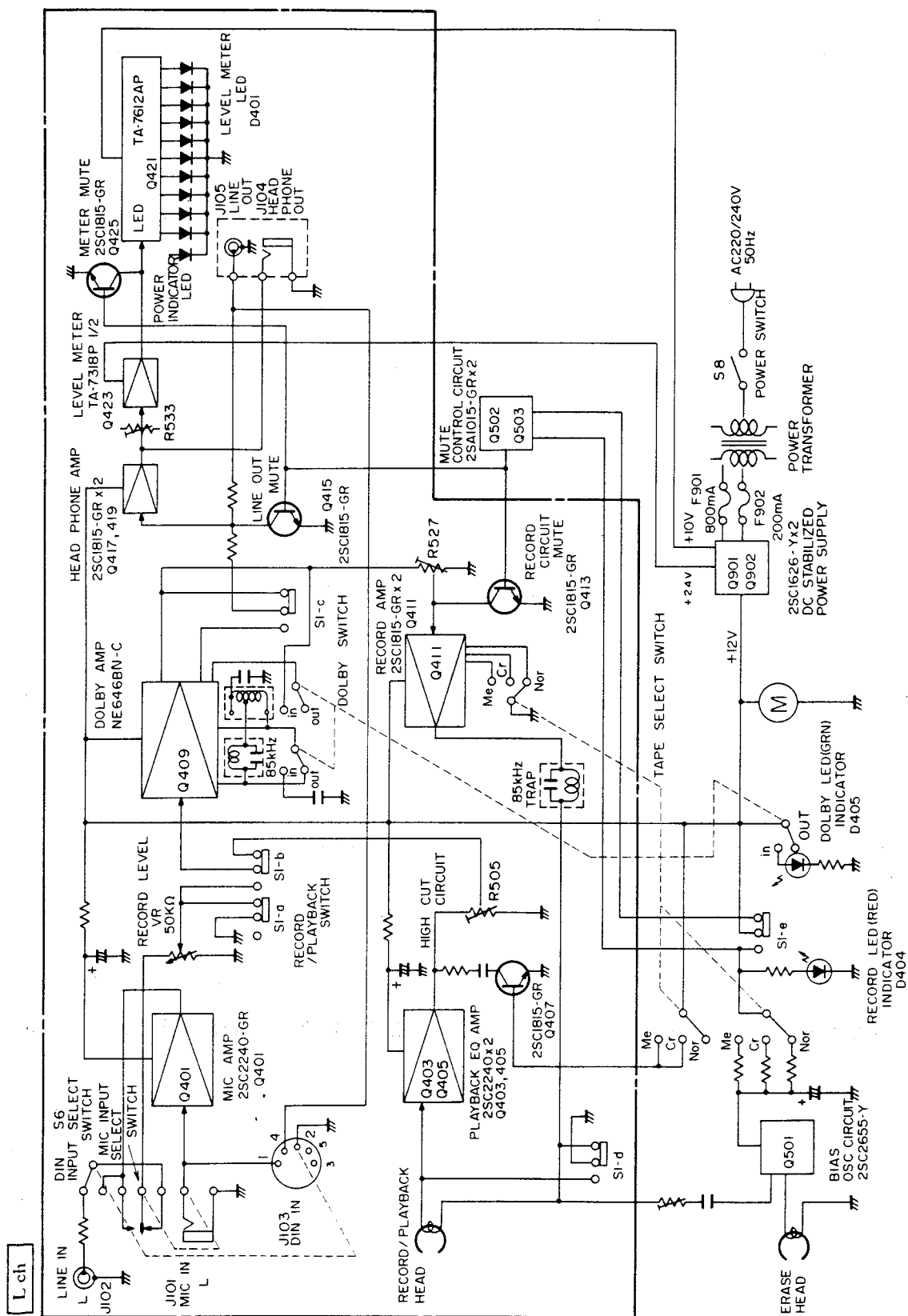


Figure 24

Notes:

- (1) This block diagram is for "TE" model.
The block diagram for "TU, AY" must be selected J103 Din Jack (includes S6) and it's associating circuit lines on this diagram.
- (2) Right channel block diagram is the same as left channel's. (Symbol numbers are different).

6. ADJUSTMENTS

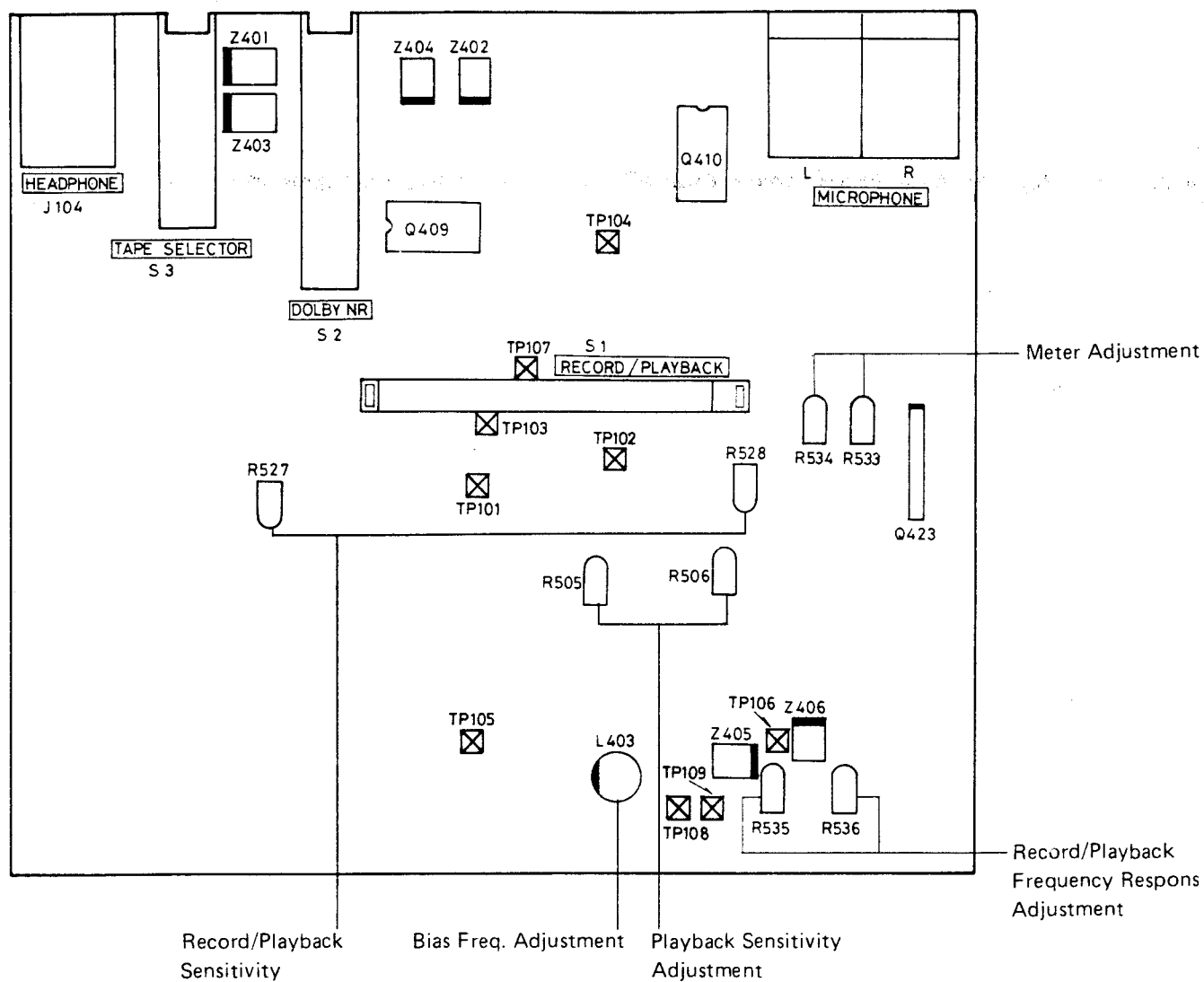


Figure 25

ADJUSTMENT PROCEDURES

No.	Description	Nominal Specs	Test Tape	Volume Control REC	Switch Position TAPE DOLBY	Adjustment Points	Test Points	Test Freq. ATT	Remarks
1	Head Azimuth Adjustment	MAX.	MTT-111		NOR	Head Azimuth Adjustment Screw	LINE OUT		MTT-114, at 10 kHz. Adjust for maximum output. (After adjustment, apply a lock paint on the screw)
2	Tape Speed Measurement	3000 ± 30 Hz	MTT-111		NOR	Semi-fixed resistor in the Motor	LINE OUT		Adjust for 3000 ± 15 Hz unless specified value is obtained at tape end.
3	Playback Sensitivity Adjustment	580 ± 10mV	MTT-150		NOR	R505 R506	TP103 TP104		MTT-150, at 400 Hz. Adjust for 580mV at test point in play mode.
4	Playback Frequency Response Measurement (Normal)	+3 dB -1 dB	MTT-215C		NOR		LINE OUT		Read level difference at 10 kHz to 315 Hz.
5	Playback Frequency Response Measurement (Chromé)	-4 ± 2 dB	MTT-215C		NOR		LINE OUT		Change for 10 kHz Normal tape
6	Output Noise Level	Under 3.0mV	Blank Tape		NOR		LINE OUT		
7	Bias Freq. Adjustment	85 ± 0.5 kHz	Blank Tape		NOR	L403	TP109		Adjust bias OSC coil for 85 kHz in record mode.
8	Line Input Level Adjustment	600 ± 10mV	Blank Tape	Adjustment	NOR	REC Volume-L REC Volume-R	LINE OUT		Adjust REC-VR (L/R) for line output 600mV.
9	Meter Adjustment	Meter +4 dB		Adjustment	NOR	R533 R534	LED Meter		Adjust for 2nd red LED from the left to begin lighting.
10	Record Playback Frequency Response Adjustment	0 + 2 dB -0	AC-512	Adjustment	OUT	R535 R536	LINE OUT		Adjust bias current for 0 ~ +2 dB at 10 kHz to 400 Hz.
11	Record/Playback Sensitivity Adjustment	0 ± 1 dB	AC-512	Adjustment	OUT	R527 R528	LINE OUT		Adjust output level for ±1 dB to input level.

Measurement Condition
 Power Supply TE: 220V TU, AY: 240V
 • Input: 0 dB = 1V rms • LINE IN (Input Impedance): 600 ohm • LINE OUT (Load Impedance): 47K ohm
 • Test Point Load Impedance: No Load

TEST EQUIPMENTS

1. VTVM (Vacuum Tube Voltmeter)
2. Signal Generator
3. Resistance Attenuator
4. Screwdriver
5. Test Tapes:
MTT-114 (10 kHz)
MTT-150 (400 Hz)
AC-511 (CHROME TAPE)

Adjust for Maximum Output.

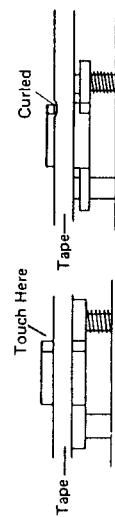


Figure 27

RECORD/PLAYBACK HEAD ADJUSTMENT

ADJUSTMENT

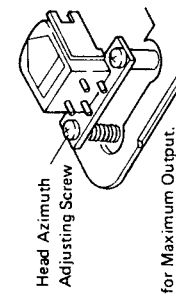
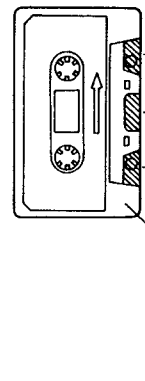


Figure 26

1. Temporally mount the erase head so that it will be even by eye measurement.
2. Set in PLAY position with setting a mirror cassette tape, MC-09C.
3. Adjust the height adjusting screw so that the upper edge of the tape will touch at the upper tape guide of the erase head. See Figure 23.
4. Confirm whether the upper edge of the tape is not curled.
5. Paint the adjusting screw with lock paint.

Figure 26
 P.S. When the mirror cassette is not available, please re-model a normal tape, type C-90 as shown below.



C-90 Cassette Tape
 The oblique lined part must be taken off.

Figure 28

ERASE HEAD HEIGHT ADJUSTMENT

1. Temporally mount the erase head so that it will be even by eye measurement.
2. Set in PLAY position with setting a mirror cassette tape, MC-09C.
3. Adjust the height adjusting screw so that the upper edge of the tape will touch at the upper tape guide of the erase head. See Figure 23.
4. Confirm whether the upper edge of the tape is not curled.
5. Paint the adjusting screw with lock paint.

Figure 26
 P.S. When the mirror cassette is not available, please re-model a normal tape, type C-90 as shown below.

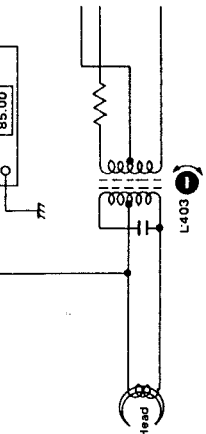


Figure 29

(Bias Freq. Adjustment)

(Playback Sensitivity Adjustment)

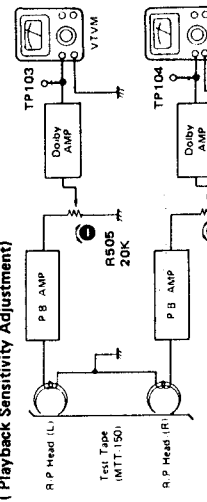


Figure 30

(Playback Sensitivity Adjustment)

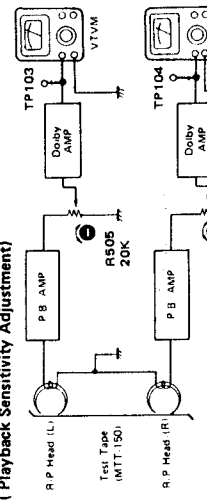


Figure 31

(Rec/Play Sensitivity Adjustment)

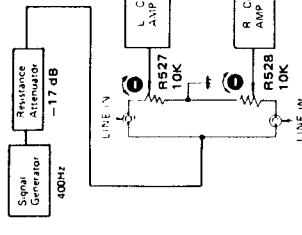


Figure 32

(Rec/Play Frequency Response Adjustment)

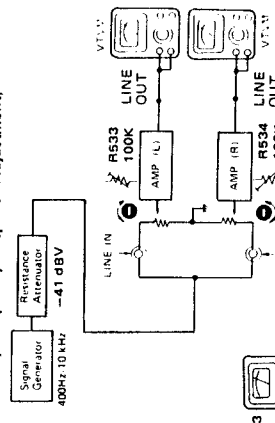


Figure 33

RECORD/PLAYBACK HEAD ADJUSTMENT

ADJUSTMENT

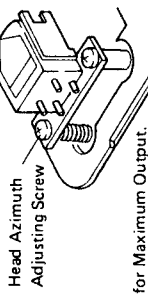
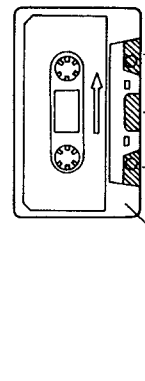


Figure 26

1. Temporally mount the erase head so that it will be even by eye measurement.
2. Set in PLAY position with setting a mirror cassette tape, MC-09C.
3. Adjust the height adjusting screw so that the upper edge of the tape will touch at the upper tape guide of the erase head. See Figure 23.
4. Confirm whether the upper edge of the tape is not curled.
5. Paint the adjusting screw with lock paint.

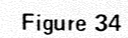
Figure 26
 P.S. When the mirror cassette is not available, please re-model a normal tape, type C-90 as shown below.



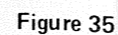
C-90 Cassette Tape
 The oblique lined part must be taken off.

Figure 28

TE



TE



Note: For parts marked "※", refer to Parts List on page 24.

TU.AY

9. ELECTRICAL PARTS LOCATIONS

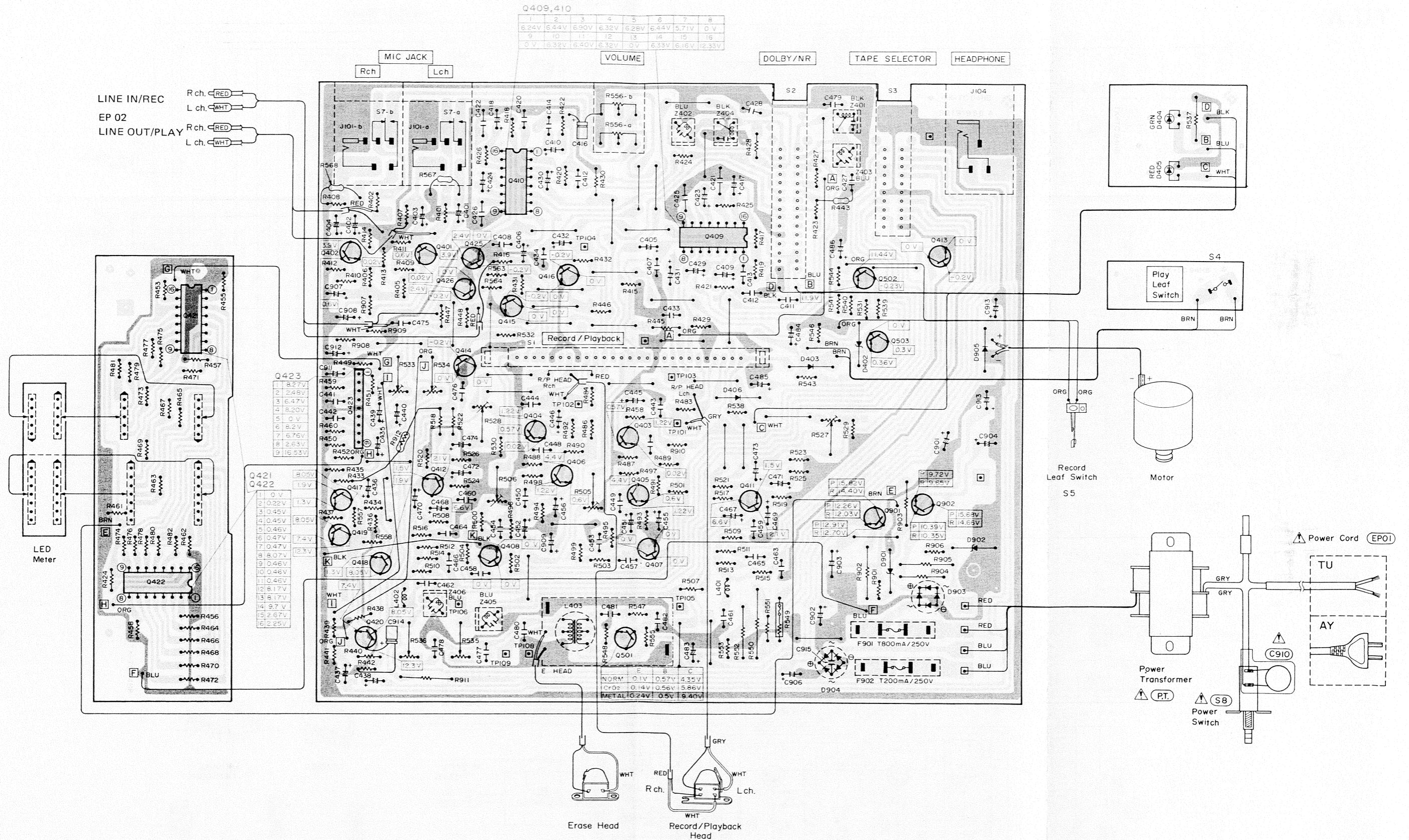
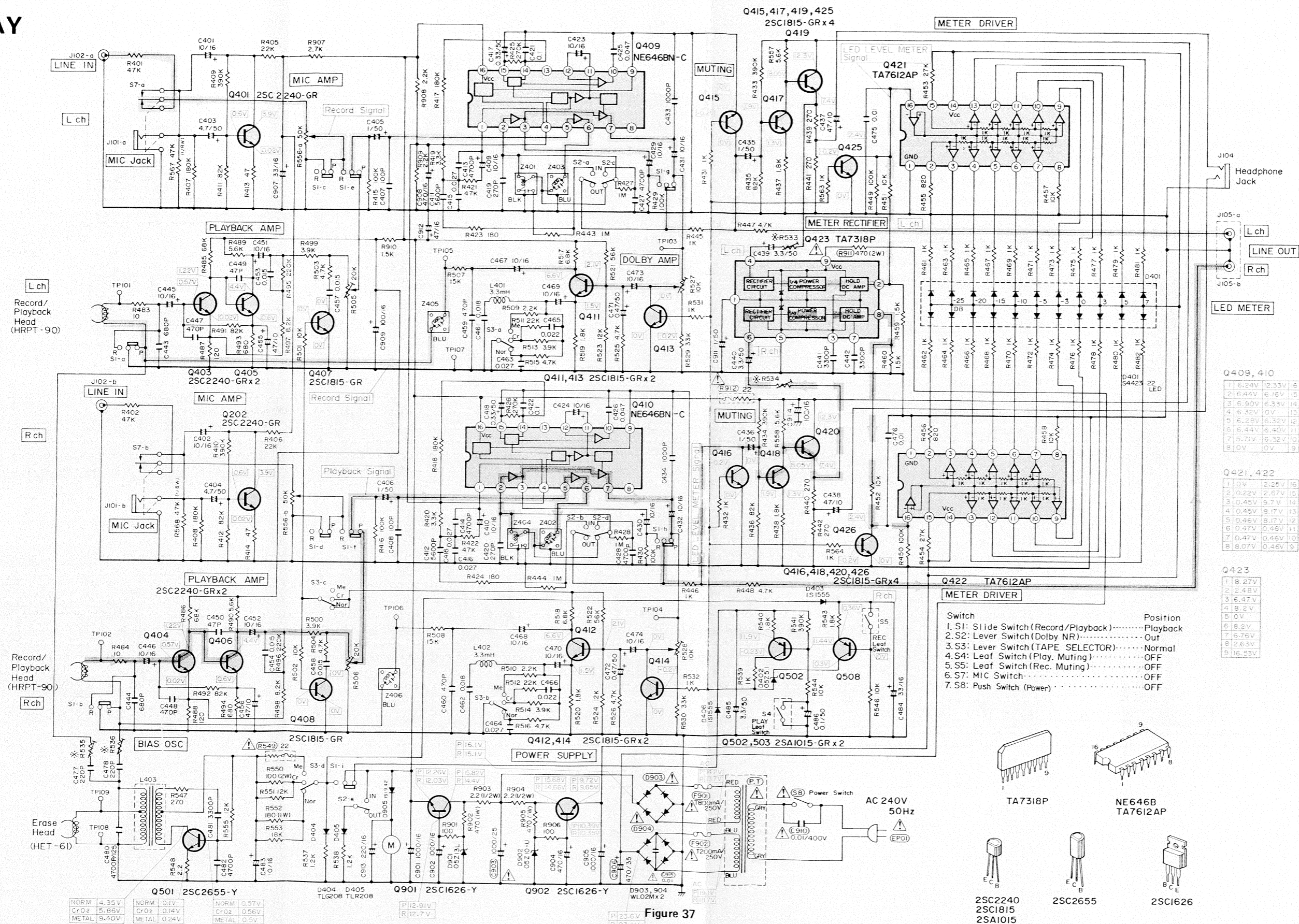



Figure 36

TU.AY



Note: For parts marked "※", refer to Parts List on page 24.

CAUTION:
The  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

11. OPERATING INSTRUCTIONS (MECHANISM)

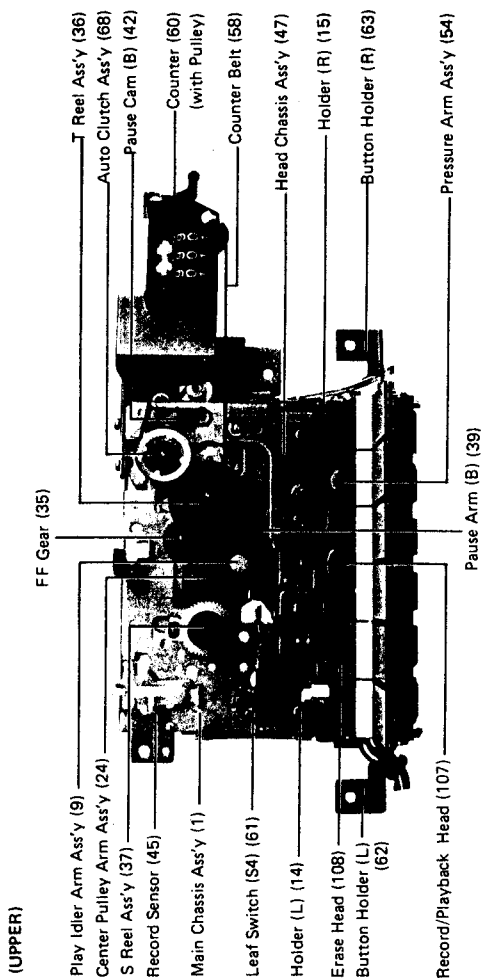


Figure 38

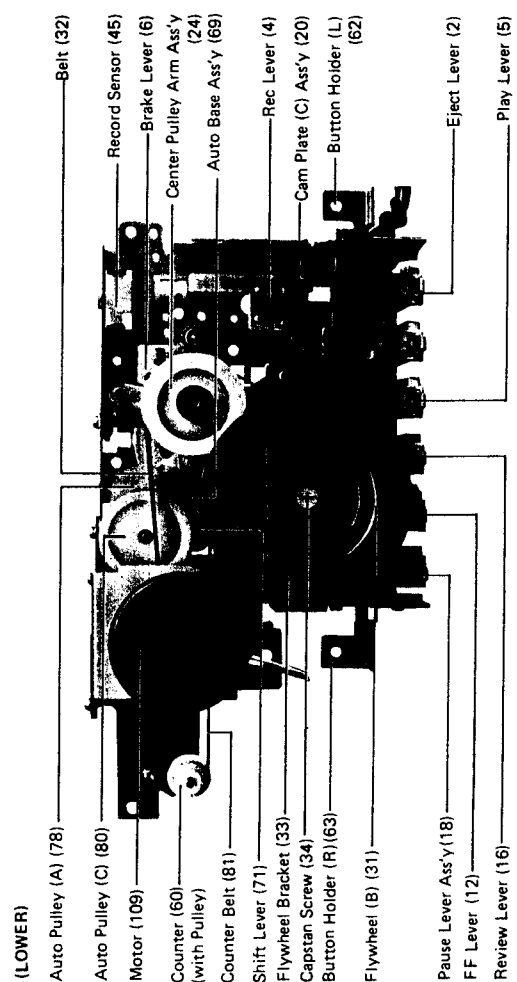
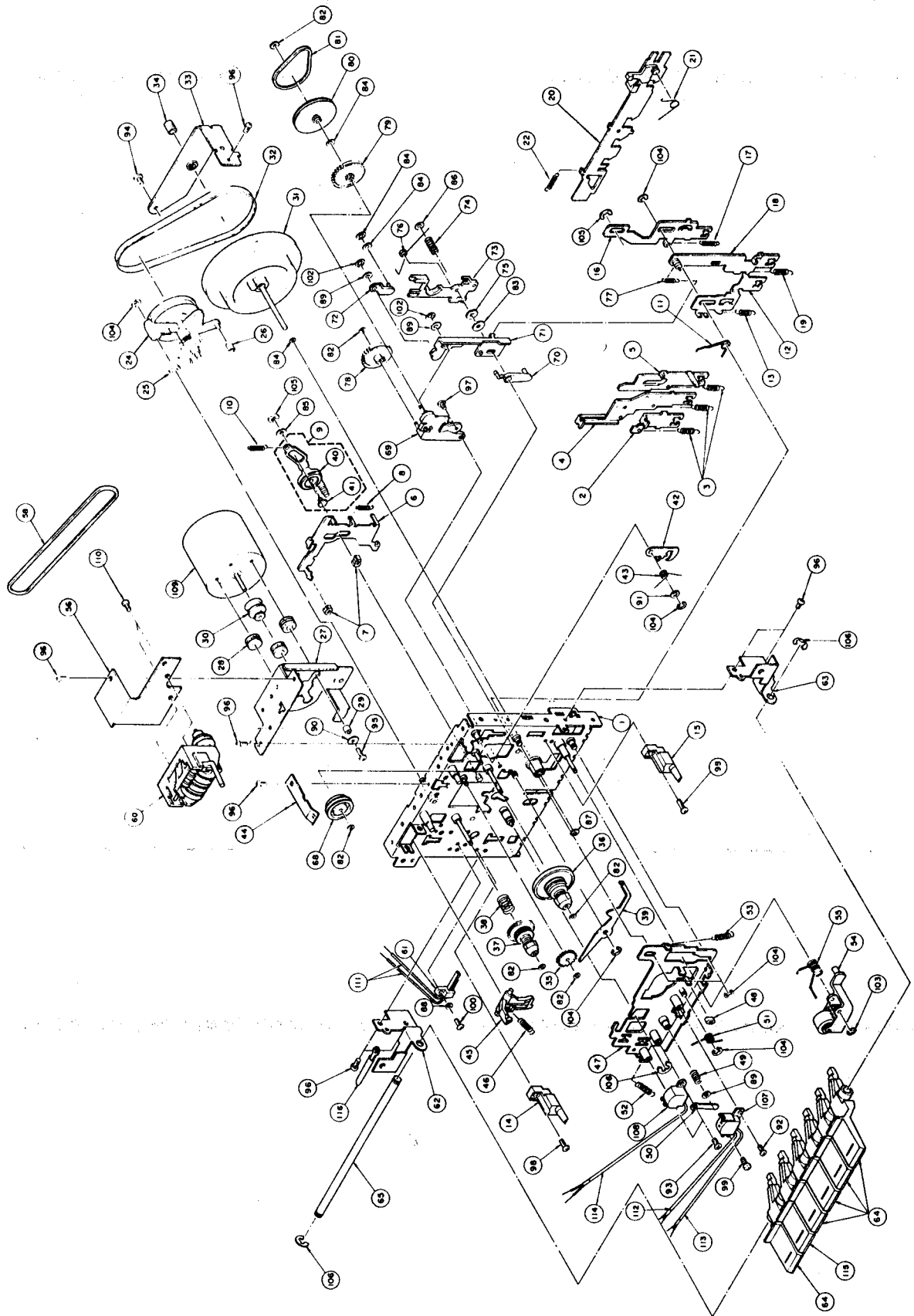


Figure 39

Note: The numbers between parenthesis show Symbol No.

12-1. MECHANISM PARTS LOCATIONS



NOTE: Parts excluded in the parts list are not available as replacement parts.

Figure 40

12-2. MECHANISM PARTS LIST

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
1	25791374	Main Chassis Ass'y	73	25782449	Sensor Arm B
3	25776335	Spring, Lever B	74	25777062	Spring, Sensor Arm B
7	25761465	Shoe, Brake	75	25762410	Felt, Clutch
8	25776336	Spring, Brake	76	25773565	Spring, Sensor Arm Tension
9	25791375	Play Idler Arm Ass'y	77	25776342	Spring, Auto Stop
10	25776337	Spring, Idler Arm	78	25756258	Auto Pulley A
11	25773566	Spring, FF Tension	79	25756259	Auto Pulley B
13	25776344	Spring, FF Lever	80	25713550	Auto Pulley C
14	22753101	Holder (L)	81	25755505	Belt, Auto B, Square, 30.5φ (1φ)
15	22753102	Holder (R)	82	22703321	Washer, Polyslider, 1.6φ
17	25776345	Spring, Rew Lever	83	22703322	Washer, Polyslider, 1.9φ
19	25776346	Spring, Pause Lever	84	22703323	Washer, Polyslider, 2.1φ
21	25773567	Spring, Auto Arm	85	22703324	Washer, Polyslider, 4.1φ
22	25776343	Spring A, Cam Plate	86	22703325	Washer, Nylon, 1.55φ
24	25791376	Center Pulley Arm Ass'y	87	22703326	Washer, Nylon, 1.9φ
25	25773568	Spring, Center Arm	88	22703318	Washer S, Plain, 2φ
26	25728162	Collar, Center Arm			
28	25761466	Cushion, Motor	90	22703281	Washer L, Plain, 2.6φ
30	25758098	Pulley, Motor	91	22703269	Washer L, Plain, 3φ
31	25717490	Flywheel B	92	22701270	Screw (PAN), 2φ x 4mm
32	25755503	Belt, FLAT 70φ x 3.5φ x 0.6t	93	22701290	Screw (PAN), 2φ x 6mm
34	25783243	Screw, Capstan	94	22707151	Screw (BID), 2.6φ x 5mm
35	25756257	Gear, FF	95	22701295	Screw (PAN), 2.6φ x 8mm
36	25712397	T Reel Ass'y	96	22701386	Screw (PAN), 2.6φ x 4mm
37	25754389	S Reel Ass'y			
38	25777060	Spring, Back Tension	99	22707505	Screw (BID), 2φ x 6mm
43	25773562	Spring, Pause Cam	100	22707298	Screw (BID), 2φ x 6mm, Tapping
44	25779191	Spring, Pack Clamp			
45	25782445	Record Sensor	102	22703320	Nut, Push 2φ
46	25776338	Spring, Record Sensor	103	22703115	E Ring, 1.5φ
47	25741870	Head Chassis Ass'y	104	22703119	E Ring, 2.5φ
48	25761467	Spacer, Head Chassis	105	22703279	E Ring, 3φ
49	25777061	Spring, Azimuth	106	22703280	E Ring, 4φ
51	25773563	Spring, Panel Tension	107	22217377	Head, Record/Playback, HRPT-90
52	25776339	Spring, Panel (L)			
53	25776340	Spring, Panel (R)	108	22218243	Head, Erase, HET-61
54	25717491	Pressure Arm Ass'y	109	22125696	Motor, DC12V, 2400RPM
55	25773564	Spring, Pressure Arm	110	22707452	Screw (BID), 3φ x 5mm
58	25755504	Belt, Counter Square, 6.5φ (0.9φ)	115	25782437	Button, REC
60	25873247	Counter	117	25762408	Spacer, Head
61	22195851	Switch, Leaf (PLAY MUT.) (S4)			
64	25782436	Button, PLAY/FF/REW/- STOP/PAUSE			
68	25713549	Auto Clutch Ass'y			
69	25783244	Auto Base Ass'y			
70	25782446	Auto Arm B			
71	25782447	Lever, Shift			
72	25782448	Shift Arm			

MC-Service

13-1. CABINET PARTS LOCATIONS

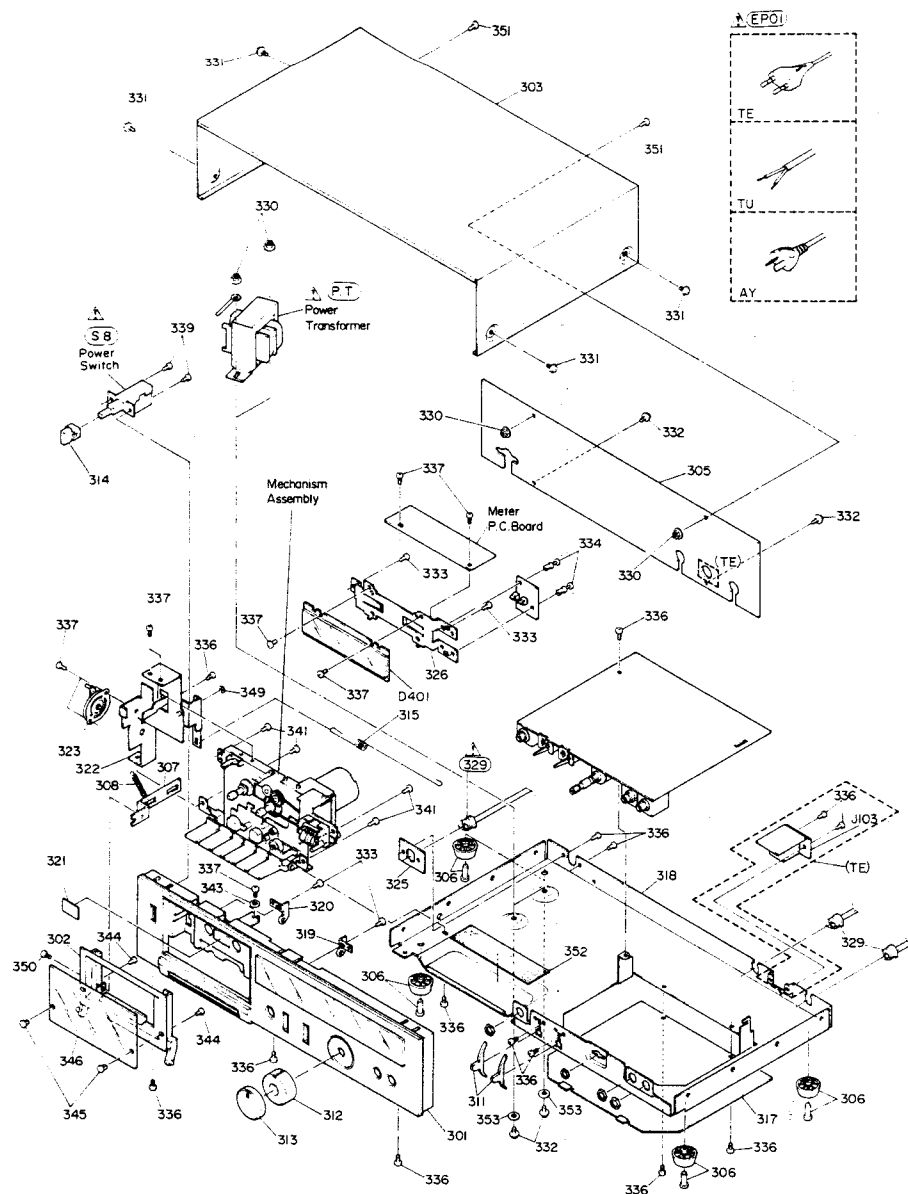


Figure 41
NOTE: Parts excluded in the parts list are not available as replacement parts.

13-2. CABINET PARTS LIST

Symbol No.	Part No.	Description
301	25819473	Front Panel Ass'y
302	25838737	Case Ass'y, Cassette
303	25838683	Top Cover
305	25838689	Jack Plate (TE)
305	25838732	Jack Plate (TU, AY)
306	22828048	Leg
307	25748384	Lever, Door
308	25776185	Spring
311	25837549	Knob, Lever
312	25837469	Knob, REC-R
313	25837468	Knob, REC-L
314	22824350	Knob, Power
315	25773552	Spring, Record Link
321	25824247	Reflector
323	25858579	Damper Ass'y
329	25845526	Bush, Cord
330	22702187	Nut
331	22707522	Screw (FLDT), 3φ x 6mm
332	22707456	Screw (FLDT), 3φ x 8mm
333	22701326	Screw (BID), 3φ x 8mm
		Tapping
334	22705022	Rivet, Plastic, 3φ x 5.5mm
336	22707445	Screw (DTBID), 3φ x 6mm
337	22707366	Screw (DTBID), 2.6φ x 6mm
338	22707521	Screw (FLDT), 3φ x 6mm
339	22707301	Screw (BID), 2.6φ x 8mm,
		Tapping
341	22707165	Screw (BID), 3φ x 10mm,
		Tapping
343	22703269	Washer, 3φ
344	22707317	Screw (BID), 2.6φ x 5mm,
		Tapping
345	25864537	Bush
346	25838685	Cover, Cassette
350	22707323	Screw (BID), 2.6φ x 8mm
351	22707163	Screw (BID), 3φ x 10mm

14. PARTS LIST

CAUTION:

The Δ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
TRANSISTORS, IC'S & DIODES		
Q401, 402 403, 404 405, 406 Q407, 408 Q409, 410 Q411, 412 413, 414 415, 416 417, 418 419, 420 Q421, 422 Q423 Q425, 426	22114681	Transistor, 2SC2240-GR
		Transistor, 2SC1815-GR IC, NE6468N-C Transistor, 2SC1815-GR
Q501 Q502, 503 Q901, 902		Transistor, 2SC2655-Y Transistor, 2SA1015-GR Transistor, 2SC1626-Y
D401 D402 D403 D404 D405 D406 D901 D902		Diode, S4423-22LED Diode, 05Z5.1 Diode, 1S1555V Diode, TLG208 (GRN) Diode, TLR208 (RED) Diode, 1S1555V Diode, 05Z13L Diode, 05Z10-U
Δ D903, 904, 905	22115485	Diode, 1S1942
ELECTRICAL PARTS		
L401, 402 L403	22232249 22232248	Coil, 3.3mH Bias Oscillator Coil
Δ P-1 Δ P-2	22223983 22223984	Transformer, Power (TE) Transformer, Power (TU, AV)
S1 S2 S3 S5	22195834 22195474 22195362 22195833	Switch, Slide (REC/PLAY) Switch, Lever (NR) Switch, Lever (TAPE) Switch, Leaf (REC MUT.)
Δ S6	22195686	Switch, Push (POWER)
J101a, b J103	22163874 22167908	Jack, Microphone (S7) Jack, DIN 5P (S6) TE

Symbol No.	Part No.	Description
J104 Z401, 404 Z402, 403 405, 406	22163875 22153117 22153116	Jack, Headphone Filter, Dolby, BLK Filter, Dolby, BLU
Δ F901 Δ F902 Δ EP01 Δ EP01 Δ EP01 EP02 EP03	22144442 22144443 22176288 22176536 22176588 22170442 22144441	Fuse, T 800mA/250V Fuse, T 200mA/250V Cord, Power (TE) Cord, Power (TU) Cord, Power (AV) Cord, US PIN Holder, Fuse
CAPACITORS		
J = $\pm 5\%$, K = $\pm 10\%$, M = $\pm 20\%$ ABBREVIATIONS: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PS = Polystyrene		
C401, 402 C403, 404 C405, 406 C407, 408 C409, 410 C411, 412 C413, 414 C415, 416 C417, 418 C419, 420 C421, 422 C423, 424 C425, 426 C427, 428 C429, 430 431, 432 C433, 434 C435, 436 C437, 438 C439, 440 C441, 442 C443, 444 C445, 446 C447, 448 C449, 450 C451, 452 C453, 454 C455, 456	22485100 22488479 22488109 22349101 22485100 22371562 22371472 22371273 22488338 22349271 22371104 22485100 22371473 22371472 22485100 22349103 22488109 22483470 22488339 22371332 22349681 22485100 22349471 22362470 22485100 22371153 22483470	EL, 10mfd, 16V, M EL, 4.7mfd, 50V, M EL, 1mfd, 50V, M CD, 100pF, 50V, K EL, 10mfd, 16V, M MY, 5600pF, 50V, J MY, 4700pF, 50V, J MY, 0.027mfd, 50V, J EL, 0.33mfd, 50V, M CD, 270pF, 50V, K MY, 0.1mfd, 50V, J EL, 10mfd, 16V, M MY, 0.047mfd, 50V, J MY, 4700pF, 50V, J EL, 10mfd, 16V, M CD, 1000pF, 50V, K EL, 1mfd, 50V, M EL, 47mfd, 10V, M EL, 3.3mfd, 50V, M MY, 3300pF, 50V, J CD, 680pF, 50V, K EL, 10mfd, 16V, M CD, 470pF, 50V, K CD, 47pF, 50V, K EL, 10mfd, 16V, M MY, 0.015mfd, 50V, J EL, 47mfd, 10V, M

Symbol No.	Part No.	Description
C457, 458 C459, 460 C461, 462 C463, 464 C465, 466 C467, 468 469, 470 C471, 472 C473, 474 C475, 476 C477, 478 C480 C481 C482 C483 C484 C485 C486	22371153 22349471 22371183 22371273 22371223 22485100 22488478 22485100 22349103 22349221 22380176 22371332 22371472 22485100 22485330 22488339 22488108	MY, 0.015mfd, 50V, J CD, 470pF, 50V, K MY, 0.018mfd, 50V, J MY, 0.027mfd, 50V, J MY, 0.022mfd, 50V, J EL, 10mfd, 16V, M EL, 0.47mfd, 50V, M EL, 10mfd, 16V, M CD, 0.01mfd, 50V, K CD, 220pF, 50V, K PS, 4700pF, 125V MY, 3300pF, 50V, J MY, 4700pF, 50V, J EL, 10mfd, 16V, M EL, 33mfd, 16V, M EL, 3.3mfd, 50V, M EL, 0.1mfd, 50V, M
C901, 902 Δ C903 C904 C905 Δ C906 C907 C908 C909 Δ C910 C911 C912 C913 C914 Δ C915	22485102 22486102 22485471 22485102 22487471 22485330 22483471 22485101 22340147 22488109 22485470 22485221 22485101 22349103	EL, 1000mfd, 16V, M EL, 1000mfd, 25V, M EL, 470mfd, 16V, M EL, 1000mfd, 16V, M EL, 470mfd, 35V, M EL, 33mfd, 16V, M EL, 470mfd, 10V, M EL, 100mfd, 16V, M CD, 0.01mfd, 400V EL, 1mfd, 50V, M EL, 47mfd, 16V, M EL, 220mfd, 16V, M EL, 100mfd, 16V, M CD, 0.01mfd, 50V, K
RESISTORS		
All resistors are carbon film 1/4W, $\pm 5\%$, unless otherwise noted. K = 1000, M = 1000000		
R401, 402 R405, 406 R407, 408 R409, 410 R411, 412 R413, 414 R415, 416 R417, 418 R419, 420	22555473 22555223 22555184 22555394 22555823 22555470 22555104 22555184 22555332	47K ohm 22K ohm 180K ohm 390K ohm 82K ohm 47 ohm 100K ohm 180K ohm 3.3K ohm

Symbol No.	Part No.	Description
R421, 422 R423, 424 R425, 426 R427, 428 R429, 430 R431, 432 R433, 434 R435, 436 R437, 438 R439, 440 441, 442 R443, 444 R445, 446 R447, 448 R449, 450 R451, 452 R453, 454 R455, 456 R457, 458	22555473 22555181 22555274 22555105 22555104 22555102 22555394 22555823 22555182 22555271 22555105 22555102 22555472 22555104 22555103 22555273 22555821 22555103	47K ohm 180 ohm 270K ohm 1M ohm 100K ohm 1K ohm 390K ohm 82K ohm 1.8K ohm 270 ohm 1M ohm 1K ohm 4.7K ohm 100K ohm 10K ohm 27K ohm 820 ohm 10K ohm
R461, 462 463, 464 465, 466 467, 468 469, 470 471, 472 473, 474 475, 476 477, 478 479, 480 481, 482 R483, 484 R485, 486 R487, 488 R489, 490 R491, 492 R493, 494 R495, 496 R497, 498 R499, 500 R501, 502 R503, 504 R505, 506 R507, 508 R509, 510 R511, 512 R513, 514 R515, 516 R517, 518 R519, 520 R521, 522 R523, 524	22555102 463, 464 465, 466 467, 468 469, 470 471, 472 473, 474 475, 476 477, 478 479, 480 481, 482 22555100 22555683 22555121 22555562 22555823 22555681 22555224 22555822 22555392 22555103 22555472 22658493 22555153 22555222 22555223 22555392 22555472 22555682 22555182 22555563 22555123	1K ohm 463, 464 465, 466 467, 468 469, 470 471, 472 473, 474 475, 476 477, 478 479, 480 481, 482 10 ohm 68K ohm 120 ohm 5.6K ohm 82K ohm 680 ohm 220K ohm 8.2K ohm 3.9K ohm 10K ohm 4.7K ohm 20K ohm, Semi-fixed Variable 15K ohm 2.2K ohm 22K ohm 3.9K ohm 4.7K ohm 6.8K ohm 1.8K ohm 56K ohm 12K ohm

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
R525, 526	22555472	4.7K ohm	* R535,536	22658494	50K ohm, Semi-fixed Variable (=2001 ~) TE
R527, 528	22658492	10K ohm, Semi-fixed Variable		22658495	100K ohm, Semi-fixed Variable (=1 ~ 1000) TU
R529, 530	22555333	33K ohm		22658494	50K ohm, Semi-fixed Variable (=1001 ~) TU
R531, 532	22555102	1K ohm		22658494	50K ohm, Semi-fixed Variable (=1 ~) AY
R537, 538	22555122	1.2K ohm	ACCESSORIES		
R539	22555102	1K ohm	AC01	22903035	Owner's Manual
R540	22555182	1.8K ohm	AC02	22990374	Cleaner, Head
R541	22555394	390K ohm			
R543	22555182	1.8K ohm			
R544	22555103	10K ohm			
R546	22555103	10K ohm			
R547	22555271	270 ohm			
R548	22555229	2.2 ohm			
R549	22500176	22 ohm, Fusible			
R550	22570307	100 ohm, 2W, Metal Oxided Film			
R551	22545122	1.2K ohm			
R552	22570265	180 ohm, 1W, Metal Oxided Film			
R553	22555182	1.8K ohm			
R555	22555123	12K ohm			
R556	22624426	50K ohm, A, Variable, Rec Level			
R557, 558	22555562	5.6K ohm			
R563, 564	22555102	1K ohm			
R567, 568	22540210	47K ohm, 1/8W			
R901	22555101	100 ohm			
R902	22570270	470 ohm, 1W, Metal Oxided Film			
R903, 904	22547229	2.2 ohm, 1/2W			
R905	22570270	470 ohm, 1W, Metal Oxided Film			
R906	22555101	100 ohm			
R907	22555272	2.7K ohm			
R908, 909	22555222	2.2K ohm			
R910	22555152	1.5K ohm			
△ R911	22570315	470 ohm, 2W, Metal Oxided Film			
△ R912	22500176	22 ohm, Fusible			
* R533,534	22658494	50K ohm, Semi-fixed Variable (=1 ~ 2000) TE			
	22658495	100K ohm, Semi-fixed Variable (=2001 ~) TE			
	22658494	50K ohm, Semi-fixed Variable (=1 ~ 1000) TU			
	22658495	100K ohm, Semi-fixed Variable (=1001 ~) TU			
	22658495	100K ohm, Semi-fixed Variable (=1 ~) AY			
* R535,536	22658495	100K ohm, Semi-fixed Variable (=1 ~ 2000) TE			